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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/515,896	02/29/2000	Akio Yoneyama	000233	9736

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ARMSTRONG,WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER
VO, TUNG T

ART UNIT	PAPER NUMBER
2613	

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13

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

		Application No.	●	Applicant(s)	
● **Office Action Summary**		09/515,896		YONEYAMA ET AL.	
		Examiner		**Art Unit**	
		Tung T. Vo		2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>03</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 February 2003</u> .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>2,3,5,7-16 and 27-29</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>2,3,5,7-16 and 27-29</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 02/03/03 has been entered.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002

do not apply when the reference is a U.S. patent resulting directly or indirectly from an

international application filed before November 29, 2000. Therefore, the prior art date of the

reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA

35 U.S.C. 102(e)).

3.   Claims 2, 3, 5, 8, 9 and 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by

Mihara (US 6,163,573).

Re claims 2, 3 and 27, Mihara discloses a video coding apparatus for coding a video

picture by the use of motion compensatory prediction of each of video pictures with respect to

sequentially input video signals (fig. 2), the video coding apparatus comprising:

inter-frame variance calculation means for calculating a variance between

timewise adjacent frames with respect to the input video signals (204, 240, 248 of fig. 2;

col. 10 line 63 through col. 11, line 5);

intra-frame coding mode decision means for deciding an intra-frame coding mode

based on the variance without using any motion compensatory prediction (204, 240, 248

of fig. 2; col. 10 line 63 through col. 11, line 5);

and one-way coding (P) frame interval decision means for deciding a P frame

interval for carrying out motion compensatory prediction coding based on the features

between time wise adjacent frames with respect to the input video pictures (240, 248 of

fig. 2; col. 11, lines 6-11);

a GOP boundary position being decided based on the decision by the intra-frame

coding mode decision means, and the P frame interval inside a GOP being decided based

on the decision by the P frame interval decision means (250 of fig. 2, col. 11, lines 12-

20).

Re claims 5, 8, 9, and 28, Mihara further disclose wherein the intra-frame coding mode

decision means selects an intra-frame coding mode when the inter-frame variance exceeds a

predetermined threshold value (col. 10 line 63 through col. 11, line 5);

wherein the P frame interval decision means divides the input video picture into small

blocks and carries out simple motion compensatory prediction by the use of a representative

value per small block so as to decide the P frame interval (col.9, line 65 through col. 10 line 9).

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 2, 3, 5, 7-13, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Kato et al. (US 6,151,360) in view of Guede (US 5,742,351)

Re claim 2, 3, and 27, Kato teaches a video coding apparatus for coding a video picture

by the use of motion compensation prediction of each of video pictures with respect to

sequentially input video signals (fig. 3), where the video coding apparatus comprising:

inter-frame variance calculation means, the picture analysis circuit (60 of fig. 3) for

calculating a variance between time-wise adjacent input video signals with respect to the input

video signals/pictures (col. 4, lines 1-9); intra-frame coding mode decision means, intra-frame

prediction mode (14, 14d of fig. 4) for deciding an intra-frame coding mode without using any

motion compensatory prediction (23 of fig. 3) based on the variance; where the motion

compensation is compensating the prediction picture data read out from the frame memory (22 of

fig. 3) based upon the vector from the motion vector detection (11 of fig. 3), see also (col. 4,

lines 39-48); and one-way coding (P) frame interval decision means, forward/backward/bi-

direction mode prediction (14a, 14b, and 14c of fig. 3) for deciding a P frame interval (fig. 11)

for carrying out motion compensatory prediction coding based on the features of the input video

pictures, which are I pictures, B pictures, and P pictures (col. 6, lines 52-57).

Kato does not particularly teach a GOP boundary position being decided based on the

decision by the intra-frame coding mode decision means, and the P frame interval inside a GOP

being decided based on the decision by the P frame interval decision means as specified in

claims 2, 3, and 27.

However, Guede teaches a GOP boundary position being decided based on the decision

by the intra-frame coding mode decision means, and the P frame interval inside a GOP being

decided based on the decision by the P frame interval decision means (figs. 3 and 8; e.g. M is a

distance between P4 and P6 of GOP2 and GOP3 for encoding).

Therefore, taking the combined teachings of Guede and Kato as a whole, it would have

been obvious to one of ordinary skill in the art to incorporate the P frame interval decision means

of Guede into the encoding apparatus of Kato for the same purpose of deciding the interval of P

frame of GOP for encoding. Doing so would obtain a less costly encoding and decoding system

as suggested by Guede (col. 1, lines 38-39).

Re claims 5, 7, 9, 28 and 29, Kato further teaches wherein the intra-frame coding mode

decision means (14d of fig. 3) selects an intra-frame coding mode (intra frame) when the inter-

frame variance exceeds a predetermined threshold value (fig. 7), where value of γ is of a smaller

value less than 1 (col. 8, lines 17-21); wherein the inter-frame variance is calculated by using at

least one of an absolute difference between the input video pictures and a pixel dispersion value

of each of small blocks, into which the input video picture is divided (col. 16, lines 25-36);

wherein the P frame interval decision means divides the input video picture into small blocks and carries out simple motion compensatory prediction by the use of a representative value per small block so as to decide the P frame interval (col. 16, lines 37-52).

Re claims 11 and 13, Kato further teaches wherein the representative value uses either one of an average inside the small block and a dispersion value inside the small block (figs. 18A-18C);

wherein the P frame interval decision means (32 of fig. 3) controls to make the frame interval small in the case (fig. 14 and 15) where a motion compensatory prediction error (23 of fig. 17) is large while controls to make the frame interval great in the case where the motion compensatory prediction error is small (col. 10, lines 3-19).

Re claims 8, 10, 12, see the analysis in claims 5, 7, 9, 11, and 13 above.

3.   Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 6,151,360) in view of Guede (US 5,742,351) as applied to claim 2 and 3, and further in view of Igarashi et al. (US 6,324,216) B1.

Re claims 14, 15 and 16, Kato further teaches means for dividing a target video picture into small blocks (MPEG, Macro-Block is MB) (col. 13, lines 40-51), where the I, P, or B is divided into macro-block (fig. 18C), the macro-block is divided into small block that is divided into pixels as well 8x8 dots (fig. 18C); coding complexity prediction means (col. 11, lines 41-55) for predicting coding complexity in each coding system based on the feature of the video picture inside the GOP so as to control a coding quantity at the time of coding in consideration of the

complexity (col. 13, lines 52-65), where I-pictures and P-pictures are for checking pattern complexity and inter-frame correlation.

It is noted that the combination of Kato and Guede fails to particularly teach judging an edge region inside the video picture based on the dispersion value of pixel information on the small block as specified in claims 14-15. However, Igarashi teaches judging an edge region inside the video picture based on the dispersion value of pixel information on the small block (figs. 2, 15A-15D, 20 and 32), where the comb deformation of edges in a picture is detected by the technique that is disclosed by Igarashi (fig. 32).

Taking the teachings of Kato and Igarashi as whole, it would have been obvious to one of ordinary skill in the art to modify the technique (fig. 32) of Igarashi into the combined encoding apparatus of Kato and Guede for the same purpose of judging (detecting) edge region inside the video picture due to the dispersion value of pixel information on the small block, such as change of motion vector of the pixel. Doing so would allow the encoding apparatus to reduce temporal redundancy depending on which will result in the least amount of transformed data so that the apparatus encodes a picture which avoids stationary portions and moving portions with high efficiency as suggested by Igarashi (col. 3, lines 27-29, col. 6, lines 24-29).

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the previous Office Action, Paper No. 3.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tung T. Vo whose telephone number is (703) 308-5874. The

examiner can normally be reached on 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chris. Kelley can be reached on (703) 305-4856. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 872-9314 for regular

communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-4700.

                                                                                    Tung T. Vo
                                                                                    Examiner
TUNG T. VO   Art Unit 2613
PATENT EXAMINER

T.Vo
March 26, 2003